2022 AIR QUALITY REPORT

CITY OF ASPEN

EXECUTIVE SUMMARY

Aspen's clean, clear skies are a cherished asset to our mountain community. However, our air quality has not always been a point of pride. For many years in the 1980s, Aspen failed to meet Environmental Protection Agency (EPA) standards for particulate matter 10 microns or less (PM_{10}). Historically, Aspen experienced the worst pollution days in the winter months, due to local sources. With climate change, western states are experiencing extreme wildfire seasons causing high pollution events in the summer months.

In response to our pollution history, City Council, staff, and the community passed local air quality regulations and programs to reduce particulate matter pollution, such as the restaurant grill ordinance and restrictions on woodburning.

Aspen's air quality remains vulnerable to wildfires and other natural events. In 2021, the city partnered with Pitkin County to increase wildfire smoke communication. We developed a new air quality webpage, *www.pitkinemergency.org/airquality*, that connects people to local air quality information via *www.AspenAirQuality.com*. The site contains details on Colorado Department of Public Health and Environment (CDPHE) air advisories, the *https://fire.airnow.gov/* (Fire and Smoke map), as well as steps to take to protect against wildfire smoke. The Pitkin Alert notification system directs people to this website during air pollution events affecting our area. Our goal is to ensure that the community has access to local air quality information so they can understand the potential health impacts and protective actions one can take during an air quality event.

The protection of Aspen's airshed is dependent on the city's shared values of stewardship, partnership, service, and innovation. Numerous city departments, regional partners, and the community play a vital role in Aspen's air quality programs. This report catalogs the air quality protection efforts taken by the City of Aspen and our partners, outlines air quality and its importance, and highlights goals for the future.

PROGRAM CONTACT

Natalie Tsevdos
Environmental Health Administrator, Air Quality
natalie.tsevdos@aspen.gov* | *970.920.5075

MORE INFO

AspenAirQuality.com

ASPEN'S CLEAN AIR STORY

Aspen sits in a valley surrounded by mountains making it more prone to temperature inversions in which warm air traps cooler air near the ground, preventing pollutants from escaping into the atmosphere.

In the 1980s, Aspen had an air pollution problem. PM_{10} and other harmful pollutants were trapped under wintertime inversions. Pollution from woodburning fireplaces, restaurant grills, vehicle exhaust, and dirt on the roads would sometimes reach unhealthy levels. In 1987, Aspen was designated a PM_{10} non-attainment area by the EPA. Since the 1980s, stricter federal emission guidelines for vehicles and local air quality regulations and programs have reduced pollution levels and air quality has improved. In 2003, Aspen was officially back in attainment for PM_{10}.

Aspen in 1985

Aspen in 2023

On November 18, 2023, the EPA maintenance State Improvement Plan (SIP) for the Aspen area expires and Aspen will no longer have a federal mandate for outdoor air quality programming. Planning is underway to provide a long-term framework for air quality protection.

COMMUNITY ACTION FOR CLEANER AIR

1970
- Aspen has frequent PM pollution clouds.

1980
- PM_{10} monitoring and in-town shuttles begin.

1983
- Aspen violates EPA PM_{10} standard.

1992
- Air quality ordinances in effect.
- RFTA begins valley-wide operations.

1995
- Vehicle idling ordinance in effect.

2003
- Paid parking implemented; first of its kind in the nation.

2007
- Aspen in attainment for PM_{10}.

2016
- Construction mitigation plan developed.

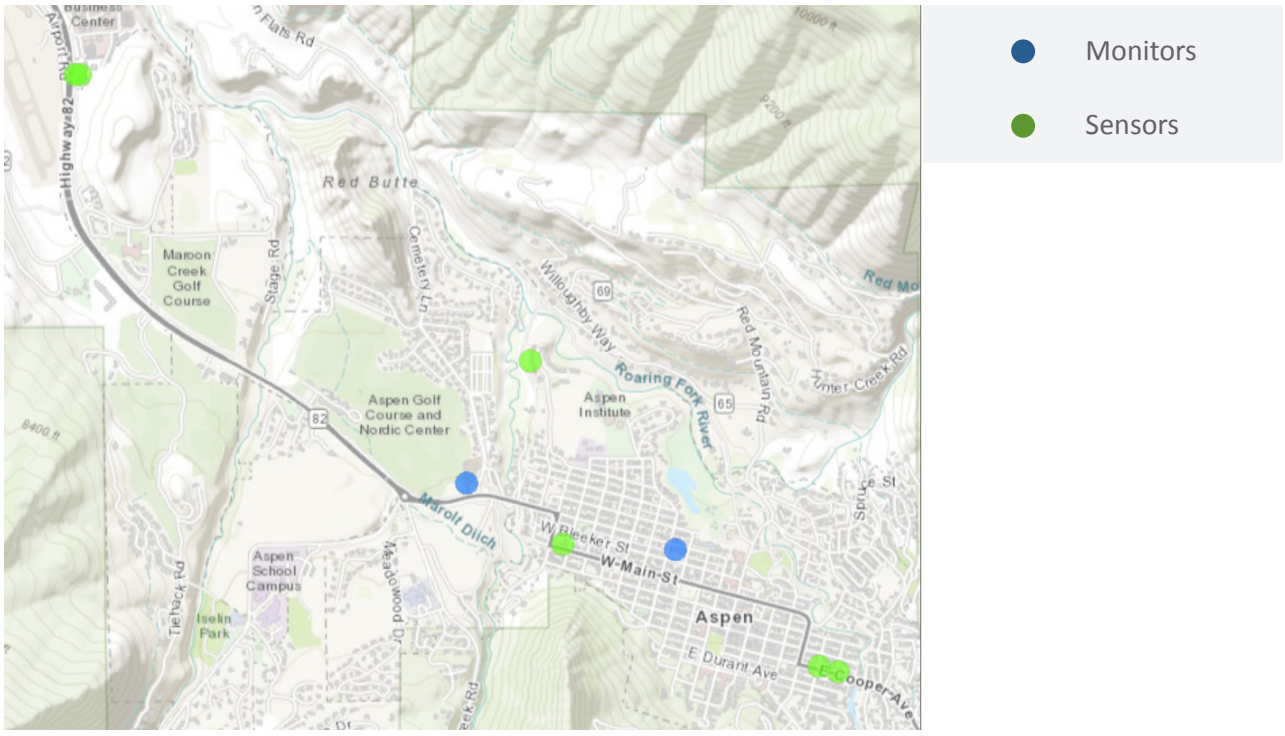
2023
- Diesel emissions ordinance in effect.
- EPA maintenance SIP expires

HOW AIR QUALITY IS MEASURED

Good air quality means the air is free of or has low levels of pollutants. Air quality is determined by assessing a variety of pollution indicators using monitors and sensors. The key difference between the two is that monitors are used for regulatory and health-based decision making while sensors do not meet EPA standards. Aspen has a Teledyne ozone monitor and a Grimm particulate monitor that meet EPA standards. The city also maintains two Purple Air sensors located at Mountain Rescue Aspen. The other sensors shown on the map below are owned and operated by other entities.

MONITORS		SENSORS	
Advantages	Limitations	Advantages	Limitations
Meet EPA requirements	Expensive to purchase and maintain	Purchased and operated by anyone	Do not meet EPA requirements
Regularly maintained and more accurate	Require oversight by an air scientist	Affordable; installed outside of a building	Less accurate; can report higher than actual levels
Data used for assessing health risks	Require a controlled environment	Placed in many locations to find pollution hot spots	Not routinely cleaned or calibrated
Data used for forecasting and modeling	Monitor placement is limited	Data used for immediate air quality conditions	Air quality assessments are not official

MONITORS & SENSORS IN ASPEN



THE AIR WE BREATHE

While air is mostly gas, it also holds lots of tiny particles called aerosols. Some aerosols, like dust and pollen, are picked up naturally when the wind blows. Air can also carry particles that cause air pollution, such as the soot, smoke, and other pollutants from car exhaust and coal and oil-fired power plants. Air pollution occurs when substances, such as particles and gases, reach harmful concentrations making it difficult to breath or causing negative health impacts over time.

AQI: AIR QUALITY INDEX

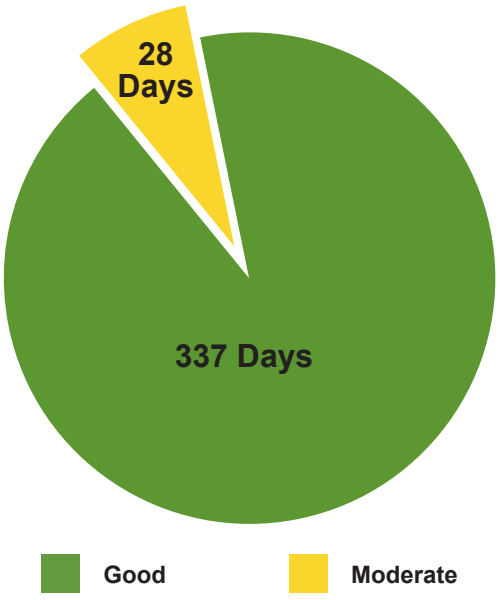
Air quality changes from day to day or even hour to hour - like the weather. Aspen uses the EPA's Air Quality Index (AQI) tool to understand current air quality and pollution levels. The higher the AQI value, the greater the level of air pollution, and the greater the health concern. Aspen's AQI is calculated using data from air quality monitors.

Think of the AQI as a yardstick that runs from 0 to 500.

AQI levels above 100 are considered unhealthy for sensitive populations, including older adults, children, and people with respiratory and heart conditions. When AQI values go above 150, air quality is considered unhealthy for everyone.

HOW WE MEASURE UP

In 2022, the Aspen area saw improved air quality from 2021 due to fewer impacts from wildfire smoke. There were 17 more days of good air quality in 2022 compared to 2021 and no days that went above moderate, compared to 2 days of unhealthy air for sensitive groups in 2021. The 28 days of moderate air quality occurred in the spring and summer months due to elevated levels of ozone and particulate matter, respectively.



PARTICULATE MATTER

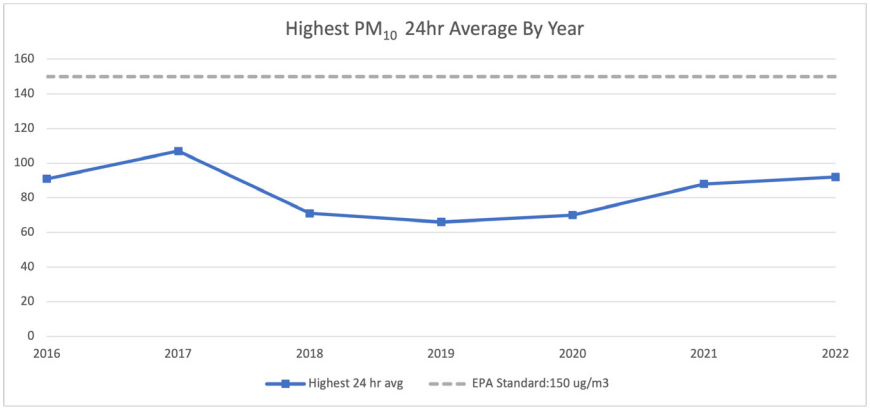
Particulate matter (PM) is a complex mixture of extremely small particles and liquid droplets. $PM_{2.5}$ is associated with the greatest proportion of severe health effects related to air pollution.

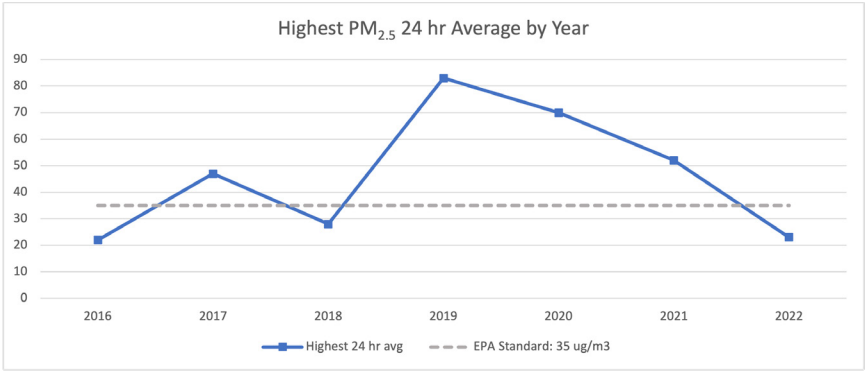
PM_{10} is “inhalable coarse particles” and can be found near roadways and construction sites.

- High levels of PM_{10} can decrease lung function and aggravate asthma and chronic obstructive pulmonary disease (COPD).

$PM_{2.5}$ is “fine particles” and can be found in smoke and haze. These particles can be directly emitted from sources like fireplaces, restaurant grills, forest fires, or when gases emitted from vehicles react in the air.

- Short-term exposure may cause respiratory symptoms and eye, nose, throat, and lung irritation. It can also decrease lung function and worsen asthma and heart disease.
- Long-term exposure may increase rates of chronic bronchitis and increase mortality from lung cancer and heart disease.





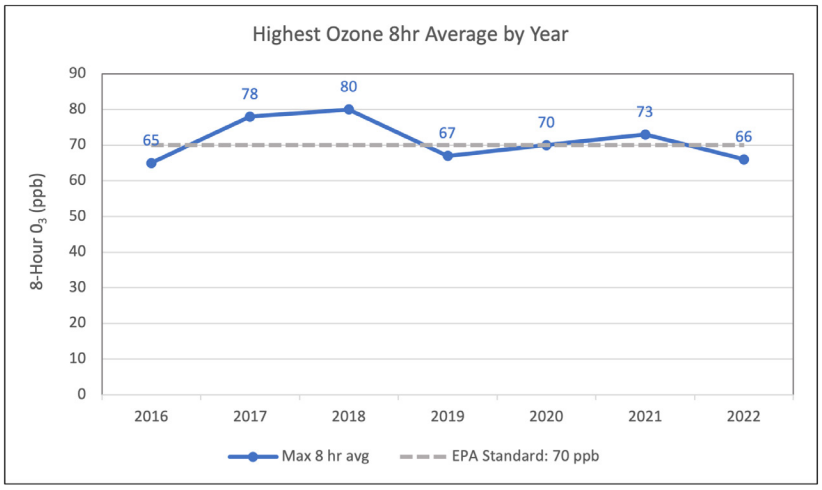
These graphs represent the highest PM_{10} and $PM_{2.5}$ daily averages by year. Wildfire smoke has a significant impact on local levels of $PM_{2.5}$. Local air quality programs are keeping PM_{10} levels low overall.

OZONE

Ground level ozone is a pollutant that forms when the right mix of nitrogen oxides (NOx) and volatile organics (VOCs) get “cooked” by sunlight. The sources for these precursor pollutants are both natural and man-made.

- Short-term ozone exposure may cause eye, nose, and throat irritation, respiratory symptoms, and decreased lung function and exercise performance, and may occur in both adults and children.

- Ground level ozone can worsen bronchitis, emphysema, and asthma, and reduce exercise performance.



This graph represents the highest ground-level ozone 8-hour average by year. Aspen experiences its highest levels of ground level ozone during the spring months (March-June) due to natural events.

AIR QUALITY AND YOUR HEALTH

The health effects of air pollution are serious and hard to escape. Microscopic pollutants in the air can slip past our body’s defenses and can cause damage to our lungs, heart, and brain. Understanding how these pollutants impact the air and our health is important, as is taking personal action during an air quality event. People with cardiovascular conditions, children, and older adults are the most at risk for experiencing negative health effects from air pollution.

Health Effects of Air Pollution

CLEAN AIR THROUGH PARTNERSHIPS

Clean air does not come naturally for the Aspen area. It takes continued dedication from the following City of Aspen departments and regional partners to keep our vistas clean and clear.

TRANSPORTATION

Less vehicles on Aspen's streets mean less vehicle exhaust and dirt being entrained in the air.

ASPEN TRANSIT PASSENGERS:
896,967

DOWNTOWNER PASSENGERS:
74,422

WE-CYCLE:
66,564 Riders (May-October)

PARKING

Paid parking and free carpool parking permits reduce single passenger vehicles.

CARPOOL PERMITS:
60,148

FORESTRY

Forestry cares for Aspen's urban forest and natural resources

POLLUTANTS REMOVED FROM THE AIR:
9,428 Pounds

CO2 REMOVED ANNUALLY:
40,000 Pounds

STREETS

Year-round street sweeping removes dirt from our roads before it becomes PM_{10}.

TRAILS

25 miles of hard surface, soft surface, and single-track trails make it easier for pedestrians and bikers to get around town.

There was a leap in trail use in 2020 and that increase has been maintained. Trail use in the shoulder seasons has grown significantly.

COMMUNITY CALL TO ACTION

The community protects our clean air by using public transportation and walking or biking instead of driving. Planting trees, avoiding burning wood, and refraining from idling reduce pollutants as well. Take steps to prepare for wildfire smoke, such as signing up for Pitkin alerts, buying a portable air cleaner, and speaking to your doctor about your health and sensitivity to air pollution.

AIR QUALITY & CLIMATE

The Environmental Health and Sustainability department recently introduced the Aspen Sustainability Action Plan (ASAP). The ASAP is the City of Aspen's guiding document for lowering the community's greenhouse gas emissions at levels necessary to reach our science-based targets of a 63% reduction by 2030 and a 100% reduction by 2050, based on 2017 emissions levels. Science based targets are designed to reduce global emissions and model community-scale climate action for others.

The ASAP puts forth opportunities for departments and community partners to collaborate on reducing emissions from several sectors, including those from vehicles and transportation. Reducing vehicle emissions can lead to lower ground-level ozone and particulate matter and lessen the health effects caused by these air pollutants.

2022 ASPEN ELECTRIC VEHICLE (EV) HIGHLIGHTS:

Aspen Police Department purchased 5 Tesla Model Y's

Replacement of direct current fast charger (DCFC) installed at S. Galena Street

Fleet Zero Emissions Roadmap direction approved by Aspen City Council

LOOKING AHEAD

Staff is looking at the near- and long-term future of Aspen's air quality, including how factors, such as a changing climate, prolonged drought, and wildfires contribute. The long-term air quality plan will fill gaps left by federal, state and county efforts; provide local education, incentives, and regulation; coordinate the efforts of multiple City departments; and allow for flexibility to respond to emerging issues.

Aspen's air quality has a high probability to be periodically impacted by wildfire smoke or dust storms from both near and far. Support of Aspen's existing air quality programs, potential new programming, and personal action during air quality events is key to maintaining clean air and a healthy, resilient community.